



RMX[®] 2000 Installation & Configuration Guide

General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the Polycom RMX[®] 2000 unit clean and free of clutter and well ventilated.
- Decide on a suitable location for the equipment rack that will hold the RMX, ensuring that it is near a grounded power outlet.
- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them. Always make sure the rack is stable before extending a component from the rack.
- In a single rack installation, attach stabilizers to the rack. In multiple rack installations, the racks should be coupled together.
- Use a regulating uninterruptable power supply (UPS) to protect the RMX from power surges and voltage spikes, and to keep it operating in the event of a power failure.
- Allow the power supply units to cool before touching them.
- Always keep the rack's trays and board's closed when not servicing, to maintain proper cooling.

Preparations

Obtain the following information from your network administrator:

- IP addresses, Subnet Mask and Default Gateway IP address (optional) for the RMX control unit and RMX Shelf Management.
- IP addresses for the RMX Signaling Host and Media cards.
- Gatekeeper IP address.
- SIP server IP address, if applicable.

If ISDN/PSTN is installed in your conferencing environment, obtain the following information from your ISDN/PSTN Service Provider:

- Switch Type, Line Coding and Framing, Numbering Plan and Numbering Type
- Dial-in number range



If the RMX is connected to the public ISDN Network, an external CSU or similar equipment is needed.

Unpacking the RMX

- 1** When you receive the RMX 2000 packing case, inspect the equipment for damage and verify that the components match the packing slip.
- 2** Open the top cover of the RMX 2000 packing case and make sure that the *Installation Accessories* kit contains the power cables and a USB Key.
- 3** Remove the top cover, lift the RMX 2000 from the package and place it on a flat surface.



Write down the RMX's serial number that is on a sticker on the back of the unit. It will be needed for product registration later in the installation process.

Management Network Configuration on the USB Key

The system is shipped with the following default IP addresses:

- Control unit IP address – 192.168.1.254
- Shelf Management IP Address – 192.168.1.252
- Control unit subnet mask – 255.255.255.0
- Default Router IP Address – 192.168.1.1

When the RMX is installed for the first time, you must change the default IP addresses to your local network settings. This can be done by modifying the default settings in the USB key shipped with the unit using the LAN Configuration Utility and uploading them to the RMX.

- 1** Take the *USB Key* from the *Installation Accessories* kit and insert it into a PC.
- 2** Double-click **LanConfigUtility.exe** to start the utility.
- 3** Modify the required network parameters in the utility's dialog box using the information supplied by your network administrator.
- 4** Click **OK**.
- 5** Remove the *USB Key* from the PC.
The *USB key* is required for first entry power-up of the RMX.

Installing the RMX

- 6** You can install it either in a rack or place it on a flat surface:
 - Install the RMX on a rack using one of two methods:
 - Install the brackets supplied by the rack manufacturer on each side of the rack on which the RMX is placed. Secure the system by fastening four screws to the rack on the front panel.
 - Install a shelf supplied by the rack manufacturer on top of which the RMX is placed. Secure the system by fastening four screws to the rack on the front panel.
 - Place the RMX 2000 on a secure, flat and clean surface.
- 7** Connect the following cables to the RMX rear panel:



- Do not remove the protective caps from LAN1, LAN3 and ShMG ports.
 - To maximize conferencing performance, especially in high bit rate call environments, a 1Gb connection is recommended.
- Power cable - insert the connector firmly into the socket so that almost all of the narrow section of the connector is inserted.
 - LAN cable to the **LAN 2** port.
 - E1/T1 Cables to **PRI** ports (if applicable)

First Entry Power-up

- 8 Insert the *USB key* with the modified IP addresses in the *USB* port on the back panel.
- 9 Power the RMX ON.
The parameters in the *lan.cfg* file are uploaded from the USB key to the RMX's memory and applied during the power-up sequence.
System power-up sequence may take up to five minutes.
During the first-time power-up the red ERR LED on the RMX's front panel remains ON until both the Management and IP Network Services have been defined.
When the RMX's configuration is completed (including the Management and IP Network Services), and if there are no System Errors, the green RDY LED on the CNTL module (on the RMX's front panel) turns ON.
- 10 Remove the *USB key*.

Product Registration and Activation Key Retrieval

Before starting the initial configuration process, register the RMX at the *Polycom Resource Center* website and download the product activation key file to the computer you will use for the configuration:

- 1 Using a Web browser, connect to <http://portal.polycom.com>.
- 2 Login with your *Email Address* and *Password* or register as a new user.
- 3 Select the **Product Registration** link.
- 4 Follow the on-screen instructions for *Product Registration* and *Product Activation*. (The RMX's serial number is on a sticker on the back of the unit, if needed.)
- 5 Write down the *Product Activation Key* number or copy it for later use.

Connecting to the MCU

- 1** Start the *RMX Web Client* application on the workstation by entering in the browser's address line the IP Address of the control unit as defined in the *USB key* in the format:
http://<Control Unit IP Address> and pressing **Enter**.
- 2** In the *RMX Web Client Welcome Screen*, enter the default *Username* (**POLYCOM**) and *Password* (**POLYCOM**) and click **Login**.
The *RMX Web Client* opens.
An MCU State indicator displays a progress indicator showing the time remaining until the system start-up is complete.
The *Product Activation* dialog box is displayed with the serial number filled in.
- 3** In the *Activation Key* field, enter or **paste** the *Product Activation Key* retrieved earlier and click **OK**.
If you do not have an *Activation Key*, click the **Polycom Resource Center** button to access the *Service & Support* page of the Polycom website.
The system prompts with a *System Reset* dialog box.
- 4** In the *System Reset* dialog box, click **No**.
As no *Default IP Network Service* is defined, the system automatically starts the *Fast Configuration Wizard*.
The *Fast Configuration Wizard* is displayed.

Configuring the IP Network Service

The *Fast Configuration Wizard* enables you to configure the *Default IP Service*. It starts automatically if no *Default IP Network Service* is defined. This happens during *First Time Power-up*, before the service has been defined or if the *Default IP Service* has been deleted, followed by an RMX reset.



On the RMX 2000, IPv4 is the default protocol for setting the Network Service in the *Fast Configuration Wizard*.

The *IP Management Service* tab in the *Fast Configuration Wizard* is enabled only if the default Management IP addresses were not modified.

- 1 In the *Fast Configuration Wizard - IP* dialog box, define the following parameters:

Field	Description
<i>IP Service Name</i>	Use the default name (Default IP Service) or enter a name using up to 20 characters. Note: This field is displayed in all dialog boxes.
<i>Signaling Host IP Address</i>	Enter the IP address of the Central Signaling host. This is the address used by endpoints for dialing in to the MCU.
<i>Media Card 1 IP Address</i>	Enter the IP address(es) of the media card (s) (MPM/MPM+/MPMx 1 and MPM/MPM+/MPMx 2 (if installed)) as provided by the network administrator. Endpoints connect to conferences and transmit call media (video, voice and content) via these addresses.
<i>Media Card 2 IP Address</i>	
<i>Subnet Mask</i>	Enter the subnet mask of the MCU. Default value: 255.255.255.0.



If *Secured Communication* is required on the RMX: complete the *Fast Configuration Wizard, Login*, install the *Certificate* and then enable the *Secured Communication Mode*.

- 2 Click **Next**.
- 3 In the *Fast Configuration Wizard - Routes* dialog box, enter the IP address of the default router.
- 4 Click **Next**.
- 5 Enter the required **DNS** information in the dialog box.

Field	Description
<i>MCU Host Name</i>	Enter the name of the MCU on the network. Default name is RMX

Field	Description
<i>DNS</i>	Select: <ul style="list-style-type: none"> • Off – if DNS servers are not used in the network. • Specify – to enter the IP addresses of the DNS servers. Note: The IP address fields are enabled only if Specify is selected.
<i>Register Host Names Automatically to DNS Server</i>	Select this option to automatically register the MCU Signaling Host and Shelf Management with the DNS server.
<i>Local Domain Name</i>	Enter the name of the domain where the MCU is installed.
<i>Primary DNS Server IP Address</i>	The static IP addresses of the primary DNS server.

- 6** Click the **Next** button.
- 7** In the *Fast Configuration Wizard - Environment* dialog box, select the *IP Network Type*: **H.323, SIP** or **H.323 & SIP**.
- 8** Click **Next**.
- 9** If you selected **SIP** go to **Step 13**.
- 10** In the *Fast Configuration Wizard - Gatekeeper* dialog box, enter the required information:

Field	Description
<i>Gatekeeper</i>	Select Specify to enable configuration of the gatekeeper IP address. When Off is selected, all gatekeeper options are disabled.

Field	Description
Primary Gatekeeper	
<i>IP Address or Name</i>	Enter either the gatekeeper's host name (if a DNS Server is used) or IP address.
<i>MCU Prefix in Gatekeeper</i>	<p>Enter the string with which the MCU registers itself with the gatekeeper.</p> <p>The gatekeeper uses this string to identify the MCU when forwarding calls to it.</p> <p>H.323 endpoints use this number as the first part of their dial-in string when dialing the MCU.</p>
Aliases	
<i>Alias</i>	<p>The alias by which the RMX's Control Unit is identified within the network. Up to five aliases can be defined for each RMX.</p> <p>Note: When a gatekeeper is specified, at least one prefix or alias must be entered in the table.</p>
<i>Type</i>	<p>Select the type that defines the format in which the card alias is sent to the gatekeeper.</p> <ul style="list-style-type: none"> • H.323 ID (alphanumeric ID) • E.164 (0-9, * #) • URL ID (URL style address) • Transport ID (IP address: port number) • Email ID (email address format) • Party Number (identical to the E.164 format) <p>Note: Although all alias types are supported (with H.323 and E.164 being the most common), the type to be used depends on your gatekeeper's capabilities.</p>

11 Click **Next**.

12 If you selected **H.323** only go to **Step 15**.

13 In the *Fast Configuration Wizard - SIP* dialog box, enter the following information:

Field	Description
<i>SIP Server</i>	Select: <ul style="list-style-type: none"> • Specify – to manually configure SIP servers. • Off – if SIP servers are not present in the network.
<i>SIP Server IP Address</i>	Enter either the IP address of the preferred SIP server or its host name (if a DNS server is used).
<i>Transport Type</i>	Select the protocol that is used for signaling between the MCU and the SIP Server or the endpoints according to the protocol supported by the SIP Server: UDP – Select this option to use UDP for signaling. TCP – Select this option to use TCP for signaling. TLS – The <i>Signaling Host</i> listens on secured port 5061 only and all outgoing connections are established on secured connections. Calls from SIP clients or servers to non secured ports are rejected. The supported security protocols are: TLS 1.0, SSL 2.0 and SSL 3.0.

14 Click the **Next** button.

15 Enter the required **Security** information in the dialog box.

Field	Description
<i>Authentication User Name</i>	Enter the conference, Entry Queue or Meeting Room name as registered with the proxy. This field can contain up to 20 ASCII characters.
<i>Authentication Password</i>	Enter the conference, Entry Queue or Meeting Room password as defined in the proxy. This field can contain up to 20 ASCII characters.

16 Click the **Save & Continue** button.

During the initial *RMX* setup, if the system detects the presence of the *RTM ISDN* card, the *ISDN/PSTN Network Service* definition screens of the *Fast Configuration Wizard* are enabled.

If there is no *RTM ISDN* card in the *RMX* or if you do not want to define an *ISDN/PSTN Network Service*, go to **Step 32**.



A new *ISDN/PSTN Network Service* can be defined even if no *RTM ISDN* card is installed in the system but only via the *ISDN/PSTN Network Service ->Add New Service* dialog box.

The *Fast Configuration Wizard's* *ISDN/PSTN* configuration sequence begins with the *ISDN/PSTN* dialog box.

17 Define the following parameters:

Field	Description
<i>Network Service Name</i>	Specify the service provider's (carrier) name or any other name you choose, using up to 20 characters. The <i>Network Service Name</i> identifies the <i>ISDN/PSTN Service</i> to the system. Default name: <i>ISDN/PSTN Service</i> Note: This field is displayed in all <i>ISDN/PSTN Network Properties</i> tabs and can contain character sets that use Unicode encoding.

Field	Description
<i>Span Type</i>	<p>Select the type of spans (ISDN/PSTN) lines, supplied by the service provider, that are connected to the RMX. Each span can be defined as a separate Network Service, or all the spans from the same carrier can be defined as part of the same Network Service.</p> <p>Select either:</p> <ul style="list-style-type: none"> • T1 (U.S. – 23 B channels + 1 D channel) • E1 (Europe – 30 B channels + 1 D channel) <p>Default: T1</p> <p>Note: Only one <i>Span Type</i> (E1 or T1) is supported on the RMX. If you define the first span as type E1 all other spans that you may later define must also be of type E1.</p>
<i>Service Type</i>	<p>PRI is the only supported service type. It is automatically selected.</p>

18 Click **Next**.

19 In the *PRI Settings* dialog box, define the following parameters:

Field	Description
<i>Default Num Type</i>	<p>Select the Default Num Type from the list.</p> <p>The Num Type defines how the system handles the dialing digits. For example, if you type eight dialing digits, the Num Type defines whether this number is national or international.</p> <p>If the PRI lines are connected to the RMX via a network switch, the selection of the Num Type is used to route the call to a specific PRI line. If you want the network to interpret the dialing digits for routing the call, select Unknown.</p> <p>Default: Unknown</p> <p>Note: For E1 spans, this parameter is set by the system.</p>

Field	Description
<i>Num Plan</i>	Select the type of signaling (Number Plan) from the list according to information given by the service provider. Default: ISDN Note: For E1 spans, this parameter is set by the system.
<i>Net Specific</i>	Select the appropriate service program if one is used by your service provider (carrier). Some service providers may have several service programs that can be used. Default: None
<i>Dial-out Prefix</i>	Enter the prefix that the PBX requires to dial out. Leave this field blank if a dial-out prefix is not required. The field can contain be empty (blank) or a numeric value between 0 and 9999 . Default: Blank

20 Click **Next**.

21 In the *Span Definition* dialog box, define the following parameters:

Field	Description
<i>Framing</i>	Select the Framing format used by the carrier for the network interface from the list. <ul style="list-style-type: none"> • For T1 spans, default is SFSE. • For E1 spans, default is FESE.
<i>Side</i>	Select the RMX side on the network. Default: User side Note: If the PBX is configured on the network side, then the RMX unit must be configured as the user side, and vice versa, or both must be configured symmetrically.

Field	Description
<i>Line Coding</i>	Select the PRI line coding method from the list. <ul style="list-style-type: none"> For T1 spans, default is B8ZS. For E1 spans, default is HDB3.
<i>Switch Type</i>	Select the brand and revision level of switch equipment installed in the service provider's central office. <ul style="list-style-type: none"> For T1 spans, default is AT&T 4ESS. For E1 spans, default is EURO ISDN.

22 Click **Next**.

The *Phones* dialog box opens.

23 To define dial-in number ranges click the **Add** button.

24 In the *Add Phone Number* dialog box, define the first and the last numbers in the phone number range.



- A range must include at least two dial-in numbers.
- A range cannot exceed 1000 numbers.

25 Click **OK**.

The new range is added to the *Dial-in Phone Numbers* table.

26 **Optional.** Repeat steps **23** to **25** to define additional dial-in ranges.

27 Enter the *MCU CLI* (Calling Line Identification).

With dial-in connections, the *MCU CLI* indicates the MCU's number dialed by the participant. In a dial-out connection, indicates the MCU (CLI) number as seen by the participant.

28 Click **Save & Continue**.

After clicking **Save & Continue**, you cannot use the *Back* button to return to previous configuration dialog boxes.

The ISDN/PSTN Network Service is created and confirmed.

29 Click **OK** to continue the configuration.

The *Spans* dialog box opens displaying the following read-only fields:

- **ID** – the connector on the *RTM ISDN* card (*PRI1* to *PRI12*).
- **Slot** – the *MPM/MPM+/MPMx* card that the *RTM ISDN card* is connected to (*MPM 1/MPM2*).
- **Service** – the *ISDN/PSTN Network Service* to which the span is assigned.
- **Clock Source** – indicates if *ISDN* signaling synchronization is being supplied by the *Primary* or *Secondary* clock source. The first span to synchronize becomes the *Primary* clock source.
- **State** – the *System Alert* level of the span (*Major, Minor*). If there are no span related alerts, this column contains no entries.

- 30** Click the check boxes in the *Attached* field to attach spans (E1 or T1 PRI lines) to the network service named in the *Network Service Name* field. The *Spans Table* displays the configuration of all spans and all ISDN network services in the system.

When using the *Fast Configuration Wizard* during *First Entry Configuration*, you are defining the first *ISDN/PSTN Network Service* in the system. Spans can only be attached to this service.

Spans can be attached to, or moved between ISDN Network Services by using the **ISDN/PSTN Network Services > ISDN Properties > Spans** tab in the *RMX Web Client*.

Each ISDN RTM card can support either 7 E1 or 9 T1 PRI lines.

Additional *ISDN/PSTN Network Services* can be defined by selecting in the *RMX Management* pane **ISDN/PSTN Network Services** and then **New ISDN/PSTN Service** in the *ISDN/PSTN Network Services* list.

- 31** Click **Next**.

The *System Flags* dialog box is displayed.

32 In the *Fast Configuration Wizard - System Flags* dialog box, enter the following information:

Flag	Value
<i>Conference ID Length (MCU)</i>	The number of digits of the Conference ID that will be assigned by the MCU. Range: 2-16 (Default: 5) Note: Selecting 2 digits limits the number of simultaneous ongoing conferences to 99.
<i>Minimum Conference ID Length (User)</i>	The minimum number of digits that the user must enter when manually assigning a numeric ID to a conference. Range: 2-16 (Default: 4)
<i>Maximum Conference ID Length (User)</i>	The maximum number of digits that the user can enter when manually assigning a Numeric ID to a conference. Range: 2-16 (Default: 8)
<i>MCU Display Name</i>	The MCU name that appears at the endpoints. Default: <i>Polycom RMX 2000</i>
<i>Terminate Conference when Chairperson Exits</i>	Yes/No (Default: Yes)
<i>Auto Extend Conferences</i>	When Yes is selected (default) allows conferences running on the RMX to be automatically extended as long as there are participants connected and there are available resources.

These flags can be modified later, if required, via the *Setup* menu's *System Configuration* option. For more information, see the *RMX 1500/2000/4000 Administrator's Guide, "System Configuration"* on page **18-5**.

- 33** Click **Save & Close**.
The RMX confirms successful configuration.
- 34** In the *Success Message* box, click **OK**.
- 35** In the *Reset Confirmation* dialog box, click **Yes**.
- 36** In the *Please wait for system reset* message box, click **OK**.



System restart may take up to five minutes.

- 37** Refresh the browser periodically until the *Login* screen is displayed.
- 38** When the *Login* screen is displayed, enter your *Username* and *Password* and click **Login**.

On first entry, the default *Username* and *Password* are both **POLYCOM**.

The RMX Web Client opens. An MCU State indicator displays a progress indicator showing the time remaining until the system start-up is complete.

- 39** Create a new *User* with *Administrator* permissions and delete the *Default User* (**POLYCOM**). For more information see "*User Definition*" on page **17**.

For system security reasons the system is not fully configured until this step has been performed.

The system is now fully configured and if there are no *System Errors*, the green RDY LED on the CNTL module (on the RMX's front panel) turns ON.


User Definition

The RMX is shipped with a default Administrator user called POLYCOM. Once you have defined other authorized administrator users, it is recommended to remove the default user to prevent unauthorized users from logging into the system.

To add a new user to the system:

- 1** In the *RMX Management* pane, click the **Users** option.
The Users pane appears.
- 2** Click the **New User** button or right-click anywhere in the pane and then click **New User**.
The *New User Properties* dialog box opens.
- 3** In the *User Name* text box, enter the name of the new user. This is the login name used by the user when logging into the system.
- 4** In the *Password* text box, enter the new user's password. This will be the user's password when logging into the system.
- 5** In the *Authorization Level* list, select the user type which determines the application display and functionality.
- 6** Click **OK**.

To delete a user from the system:

- 1** In the *RMX Management* pane, click the **Users** option.
- 2** Select the user (**POLYCOM**) and click the **Delete**  button or right-click the user and then click **Delete User**.
The system displays a confirmation message.
- 3** In the *Users* pane, select **Yes** to confirm or **No** to cancel the operation.

Selecting the RMX Web Client Languages

By default, the *RMX Web Client* interface is displayed only in English. However, the system administrator can choose the languages available for selection on the *Login* screen.

To customize the Multilingual Setting:

- 1 On the RMX menu, click **Setup > Multilingual Setting**.
The *Multilingual Setting* dialog box is displayed.
- 2 Place check marks in the boxes of the languages to be available for selection.
- 3 Click **OK**.
- 4 **Log out** and **Log in** for the customization to take effect.

Conferencing Entities

The RMX is shipped with one Entry Queue and four Meeting Rooms:

- Entry Queue **DefaultEQ** whose ID is **1000**, and it is used to access the default Meeting Rooms
- Four Meeting Rooms whose IDs are **1001**, **1002**, **1003** and **1004**.

The default conferencing entities are set to line rate of 384 Kbps, Auto Layout, Polycom Skin and have a default duration of one hour.

The default *Entry Queue* is also set to Ad Hoc conferencing which allows participants to start new conferences without prior definition by entering a Conference or Meeting Room ID other than those used for the default Meeting Rooms and that is not used by any on going conference currently running on the MCU.

For IP conferencing, these conferencing entities can be used to start new conferences without any additional settings.

However, if ISDN/PSTN endpoints are participating in the conferences an ISDN/PSTN dial-in number must be manually assigned to the Conference, Meeting Room or Entry Queue as the number depends on the dial-in numbers range defined in the ISDN/PSTN Network Service. For more information, see the *RMX 1500/2000/4000 Administrator's Guide*, "Modifying the EQ Properties" on page 4-8.

For more information on ISDN Network Services, see the *RMX 1500/2000/4000 Administrator's Guide, "ISDN/PSTN Network Services"* on page **13-43**.

If additional Entry Queues and Meeting Rooms are required, for example, for conferencing at different line rates, you can customize the conferencing entities to your organization's requirements and define additional conferencing entities. For more details, see the *RMX 1500/2000/4000 Administrator's Guide*.

To start ongoing conferences and monitor their status see the *RMX 1500/2000/4000 Getting Started Guide, Chapter 3 "Basic Operation"*.

Connecting to a Conference Directly or via Entry Queue

The RMX is shipped with pre-configured default conferencing entities that can be used to dial in and start conferences. Default (Transit) Entry Queue ID: 1000, default Meeting Room IDs: 1001, 1002, 1003, and 1004.

H.323 Participants

H.323 participants dial:

[MCU Prefix in Gatekeeper][Conference or Entry Queue ID/Name].

For example, if the MCU prefix in gatekeeper is 925, you can dial to the default (Transit) Entry Queue by entering 925 or 9251000 and be routed to Meeting Rooms by entering its ID (i.e. 1001, 1002, 1003 or 1004). You can connect directly to one of the default Meeting Rooms, by dialing its number, for example: 9251001.

Alternatively, you can use the Entry Queue or conference name to connect directly to the conference. For example, if the conference name is Maple_Room, the participant can dial: 925Maple_Room.

SIP Participants

For SIP participants the dialing string is composed of the conference routing name as registered with the SIP server and domain name in the following format: **conference_name@domain_name**.

For example, if the conference name is Maple_Room, the participant dials: Maple_Room@polycom.com.

ISDN/PSTN Participants

ISDN and PSTN participants can connect to conferences and Meeting Rooms directly or via an Entry Queue by dialing one of the numbers (including the country and area code if needed) assigned to the conference, Meeting Room or Entry Queue. When connecting to an EQ they are routed to their conference according to the conference ID.

For example, if the assigned dial in number is 4045555, the ISDN/PSTN participant dials this number with the appropriate area code (for example, 678) and country code (001).

Conference Control Using DTMF Codes

Operation	DTMF String
Individual Help	*0
Conference Help	00
Mute My Line	*6
Unmute My Line	#6
Increase Broadcast Volume	*9
Decrease Broadcast Volume	#9
Increase Listening Volume	*76
Decrease Listening Volume	#76
Play Help Menu	*83
Start Click&View to modify personal layout	**
Change To Chairperson	*78
Show Number of Participants	*88